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| Job Number:       | IN1305                 | Date: | 20/02/2023 |

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### ADDITIONAL:

Payment Terms:

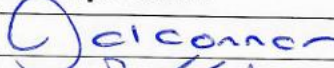
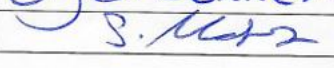
50% / 40% / 10%

Other: please specify \_\_\_\_\_

Penalty Clause Yes / No

Please specify: \_\_\_\_\_

### Blue Book Completion:

|          |                                                                                     |      |         |
|----------|-------------------------------------------------------------------------------------|------|---------|
| Signed   |  | Date | 15/6/23 |
| Verified |  | Date | 15/6/23 |

### 3 - MACHINE SPECIFICATION

|                   |                        |       |            |
|-------------------|------------------------|-------|------------|
| Client:           | Minerva Scientific Ltd |       |            |
| Quotation Number: | 16922                  | Date: | 25/01/2023 |
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| Ref No.                         | Product Description                                        | Required |
|---------------------------------|------------------------------------------------------------|----------|
| <b>HS2022</b> (continuous flow) |                                                            |          |
| 20402/1                         | HS2022 Ref Gas + P Mag                                     |          |
| 20402/2                         | HS2022 Ref Gas + E-Mag                                     |          |
| 20402/3                         | HS2022 Ref Gas + Hd Collector + E-Mag                      |          |
| 20402/4                         | HS2022 Ref Gas + Hd Collector+E-Mag+Trap Loop              |          |
| 20501                           | Hd Collector Assy                                          | ***      |
| 50101/2                         | Trapping Loop Assy                                         |          |
| 70201-1                         | 70201-1 Analyser spares kit – Included                     |          |
| <b>EA Units</b>                 |                                                            |          |
| 10202/11                        | iso-EArth                                                  |          |
| 10202/13                        | iso-EArth+                                                 |          |
| 10202/14                        | iso-Earth HT Furnace Upgrade                               |          |
| 10202/15                        | Iso-Earth (Without Autosampler)                            |          |
| 11802/1                         | Earth+PC                                                   |          |
| 11802/2                         | EArth+Clarity+PC                                           |          |
| 70501-1                         | Consumables for C and N for Combustion Only                |          |
| 70501-11                        | Simultaneous CNS Consumables Kit (approx. 10000 analysis)  |          |
| 70501-3                         | Sample Prep Kit (Inc.)                                     |          |
| 70501-4                         | GSL Combustion and Gas C & N Start Up Kit                  |          |
| 70501-5                         | Simultaneous NCS Consumables Kit                           |          |
| 70501-6                         | C&N Combustion Only Consumables Kit (approx. 5000 samples) |          |
| 70501-8                         | Simultaneous CNS Consumables Kit (approx. 5000 samples)    |          |
| 70601-1                         | Sulphur Start Up Kit (Inc. with Sercon EA Systems)         |          |
| 70601-2                         | Sulphur Consumables Kit for 1000 Samples                   |          |
| 70601-4                         | Sulphur Consumables Kit (approx. 5000 Samples)             |          |
| 70801-2                         | Pyrolysis Consumables Kit-Low temp for Solids              |          |
| 71701-1                         | Sub Microgram Nitrogen Analysis Start Up Kit               |          |
| SI2040                          | PN150 Pneumatic Autosampler with one no.50 pos, carousel   |          |
| SI2345                          | ME Micro Balance                                           |          |
| SI2737/A                        | Sercon 50 Position Autosampler Assy                        |          |
| SI2789                          | Extra 50 Position Carousel                                 |          |
| SI2744                          | Automatic Liquid Sampler 15 Position                       |          |
| SI2743                          | Liquid Sampler Mounting Plate                              |          |
| <b>Headspace Equilibration</b>  |                                                            |          |
| 10202/10                        | XYZ Gas Sampling Control Box                               |          |
| 10302/1                         | Aqua System                                                |          |
| 11103                           | µCarbs for CF                                              |          |
| 11103-1                         | µCarbs for DI                                              |          |
| 11601                           | 200 Place Dual Heated Block 240 Volt                       |          |
| 11801                           | Sercon XYZ Gas Autosampler                                 |          |
| 71107-1                         | CF oxygen-18 equilibration kit                             |          |
| 71107-2                         | DI Oxygen-18 Equilibration kit                             |          |
| 71201-1                         | CF deuterium equilibration kit                             |          |
| 71201-2                         | DI Deuterium Equilibration kit                             |          |
| 71801-1                         | WES-DI start up kit (Inc. with WES-DI)                     |          |
| <b>GC Units</b>                 |                                                            |          |
| 10402/2                         | Orchid module 1500C (Will run Hd 70901-1 C Spares Kit Inc) |          |
| 10901                           | Nitrogen Option (71301-1 N Spares kit Included)            |          |
| HP7890/1                        | Agilent 7890B GC System                                    |          |
| HP7890/2                        | Agilent 7890B GC with Auto Injector                        |          |
| HP7890/3                        | Agilent 7890B GC + Auto Injector + 150 Vial Sample Tray    |          |
| SI2561                          | Nexis GC 2010 Plus                                         |          |

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| Ref No.                          | Product Description                                        | Required |
|----------------------------------|------------------------------------------------------------|----------|
| <b>GC Units</b> <i>continued</i> |                                                            |          |
| SI2564                           | Nexis GC-2030                                              |          |
| 70901-3                          | GC Pyrolysis H and O Start Up Kit                          |          |
| 70901-4                          | GC Pyrolysis H Spares Kit                                  |          |
| 70901-5                          | GC Combustion C Spares Kit (approx. 5000 samples)          |          |
| 70901-6                          | GC Pyrolysis h Start Up Kit (approx. 5000 samples)         |          |
| 71301-1                          | GC N Spares kit                                            |          |
| <b>ABCA2 Units</b>               |                                                            |          |
| 10502/1                          | ABCA2 Sercon XYZ Autosampler                               |          |
| 10602                            | ABCA2 Gas Box                                              |          |
| 20602                            | Complete Sercon ABCA2 system                               |          |
| 20603                            | ABCA IR Analyser                                           |          |
| 70101-1                          | ABCA2 spares kit (Inc. With ABCA2)                         |          |
| 70101-2                          | ABCA2 Spares Kit for AB Analytica Systems                  |          |
| 70101-3                          | ABCA2 Autosampler Upgrade Kit                              |          |
| SI1767                           | CVL505 – Barcode Reader                                    |          |
| SC9973                           | 13C Urea breath test kit for Helicobacter pylori infection |          |
| SC9974                           | Helicobacter Test kit for children age 3-11 (45mg)         |          |
| <b>Integra2 Units</b>            |                                                            |          |
| 20802/4                          | Integra2                                                   | Y        |
| 70201-2                          | Integra2 analyser spares kit - Included                    | Y        |
| 70401-1                          | Integra-2 consumables (Inc. With Integra2)                 | Y        |
| <b>Trace Gas Systems</b>         |                                                            |          |
| 10802/4                          | CryoPrep                                                   |          |
| 10802/5                          | Automated LN refiller                                      |          |
| 10802/6                          | CryoFlex (TOC)                                             |          |
| 10802/7                          | CryoGas                                                    |          |
| 10802/8                          | CryoFlex (LA)                                              |          |
| SI2533                           | Silicon Carbide Vertical Furnace                           |          |
| SI2731                           | 213nm Laser Ablation System                                |          |
| SI2733                           | isoScell 100 sampler chamber                               |          |
| 71001-1                          | Cryoprep Spares Kit                                        |          |
| 71001-5                          | CryoGas Consumables Kit                                    |          |
| <b>TOC Units</b>                 |                                                            |          |
| 14001                            | Thermalox Environmental TOC-IRMS                           |          |
| 14002                            | Thermalox Environmental TOC-Standalone                     |          |
| 14003                            | Thermalox Environmental TOC-Standalone No Sampler          |          |
| SI2772                           | CO2 Detector, High sensitivity Option                      |          |
| SI2773                           | NOx detector Option                                        |          |
| SI2774                           | Vacuum pump Option                                         |          |
| SI2775                           | Stirred Vial rack Option                                   |          |
| 72101-1                          | TOC Start Up Kit                                           |          |
| 72101-2                          | TOC Chem Pack                                              |          |
| 72101-3                          | TOC & TN Instrument with heavy usage - one year            |          |
| 72101-4                          | TOC only - economy holding                                 |          |
| <b>GEO 20-22 (dual inlet)</b>    |                                                            |          |
| 10702                            | GEO 20-22 Water Equilibration System (D & 18O)             |          |
| 21802/1                          | GEO 20-22                                                  |          |
| 21802/2                          | GEO 20-22 + E-Mag                                          |          |

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|              |                                                               |  |
|--------------|---------------------------------------------------------------|--|
| 21802/3      | GEO 20-22 + E-Mag +Hd                                         |  |
| 21802/4      | GEO 20-22 Inlet                                               |  |
| 70301-1      | GEO start up kit - Included                                   |  |
| 70301-3E     | Comprehensive GEO 20-22 spares kit for 5 years operation      |  |
| <b>HT-EA</b> |                                                               |  |
| 11501/4      | HT-EA (With Autosampler)                                      |  |
| 11501/5      | HT-EA With Liquid Option                                      |  |
| 11501/6      | HT-EA Stand Alone                                             |  |
| 11501/7      | HT-EA (Without Autosampler)                                   |  |
| SI2622       | CTC PAL3-LSI-L-S                                              |  |
| SI2624       | CTC PAL3-Kit-Standalone                                       |  |
| 70801-1      | Pyrolysis Consumables Kit-High Temp for Solids                |  |
| 71501-1      | HT-EA Pyrolysis Start Up kit O and H                          |  |
| 71501-2      | HT-EA Pyrolysis Kit for Water injections                      |  |
| 71501-3      | HT-EA Sensitivity Start Up Kit for O & H in small samples     |  |
| 71501-4      | HT-EA Sensitivity Consumables Kit for O & H in small samples  |  |
| 71501-5      | HT-EA Sensitivity Kit for O&H in Small Samples (5000 samples) |  |
| 71501-7      | HT-EA Kit for Room Temp Equilibration                         |  |
| 71501-8      | HT-EA Pyrolysis Kit for Water injections (approx. 1 year kit) |  |

| Ref No.          | Product Description                                                             | Required            |
|------------------|---------------------------------------------------------------------------------|---------------------|
| <b>Upgrades</b>  |                                                                                 |                     |
| 12101            | Evacuation System ***                                                           |                     |
| 12102            | 2 Ref Gas+ Dilutor Box ***                                                      |                     |
| 20101            | Standard Source Assy ***                                                        |                     |
| 20102            | HS Source Assy ***                                                              |                     |
| 20301            | Standard Collector Assy ***                                                     |                     |
| 30202/1          | System Control Upgrade (Pmag) installation not included                         | Edwards Or Pfeiffer |
| 30202/2          | System Controller Upgrade (Emag) installation not included                      | Edwards Or Pfeiffer |
| 10202/7          | Preparation PCB Upgrade                                                         |                     |
| 30202/3          | Hijack Box ***                                                                  |                     |
| 30302/4          | nEXT85 Edwards Pumping System Upgrade Single - installation not included        |                     |
| 30302/5          | nEXT85 Edwards Pumping System Upgrade Dual - installation not included          |                     |
| 30302/6          | nEXT85 Edwards Pumping System Upgrade Triple- installation not included         |                     |
| SI2542           | ABCA2 Upgrade Kit                                                               |                     |
| CALLISTOW        | Callisto software upgrade ***                                                   |                     |
| <b>Specials</b>  |                                                                                 |                     |
| 11702            | LC-I interface                                                                  |                     |
| 12202            | Leco Interface Unit                                                             |                     |
| SI2320           | Agilent 1260 Series Refractive Index Detection HPLC System                      |                     |
| 71401-1          | ABCA-G Start Up/Spares Kit                                                      |                     |
| 71401-2          | ABCA-G Equilibration Spares Kit - Room temp O only                              |                     |
| 71401-3          | ABCA-G Equilibration Spares Kit - Room Temp O & H                               |                     |
| 71601-1          | LC Interface Spares Kit                                                         |                     |
| <b>ADDITIONS</b> |                                                                                 |                     |
| PC               | Windows 7 based PC System with Callisto Software                                | Y                   |
| Printer          | Printer                                                                         |                     |
| INST1            | Installation and start up training at customer's site by <b>Sercon</b> Engineer | Y                   |
| INST2            | Installation and start up training at customer's site by <b>Agents</b> Engineer |                     |
| WARR             | 1 year warranty                                                                 |                     |
| WARR2            | 2 year warranty                                                                 | Y                   |
| TRAIN            | Training in UK for one person for 3 days                                        |                     |
| SCONTRACT        | Maintenance Service Contract - 1 year                                           |                     |

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| SPECIFICATION REQUIREMENTS |                                                    |   |
|----------------------------|----------------------------------------------------|---|
| Voltage                    | 230 Volts 50/60Hzs                                 | Y |
| Plug Type                  | SI2510 3 Metre USA/Japan plug to IEC C 13          |   |
|                            | SI2511 2.5 Metre Australian plug to IEC C 13       |   |
|                            | SI2512 3 Metre UK 13 amp Fused plug to IEC C 13    | Y |
|                            | SI2523 3metre Schuko (Euro) Plug to IEC C13 Socket |   |
|                            | SI2514 2.5 metre Chinese mains to IEC C13          |   |
| Pallet                     | Stamped for export heat treated for 30 min @ 56 °C | Y |
|                            | Complies with all Export Requirements              |   |

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| Job Number:       | IN1305                 | Date: | 20/02/2023 |

[illegible]

|                                       |                  |
|---------------------------------------|------------------|
| Approved by Sales: <i>G Armstrong</i> | Date: 06/03/2023 |
| Approved by Tech.: M O'Connor         | Date: 06/03/2023 |



## 4 - LOG SHEET

|                   |                        |       |            |
|-------------------|------------------------|-------|------------|
| Client:           | Minerva Scientific Ltd |       |            |
| Quotation Number: | 16922                  | Date: | 25/01/2023 |
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| Date      | Action Taken                                                                                                                                                                                                                                                     | By Whom |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 27.4.23   | GC and COM pumps would not drive, GC fix was a loose crimp on the pulse. com fix lead us to swap the pump, tighter crimp connection from toroidal → mains TB.                                                                                                    | JH      |
| 28.4.23   | Furnace, then found to have 0 continuity, replaced <sup>FUSE</sup> furnace now drives.                                                                                                                                                                           | JH      |
|           | Valves firing when sys con turned on, faulty valve board in sys con. Swapped for new sys con, working properly. (FAULT-20210004)                                                                                                                                 | JH      |
|           | Combustion + Reduction + Water Temp columns made and installed.                                                                                                                                                                                                  | JH      |
|           | Pumping down - 2.1e-7 @ 3.30pm                                                                                                                                                                                                                                   | JH      |
|           | Pressure test + leak check                                                                                                                                                                                                                                       | JH      |
|           | Crimps set on - Me line                                                                                                                                                                                                                                          | JH      |
| 2.5.23    | Oxygen crimp set                                                                                                                                                                                                                                                 | JH      |
|           | Flow to source crimp set                                                                                                                                                                                                                                         | JH      |
|           | Flow meter calibrated                                                                                                                                                                                                                                            | JH      |
| 04-May-23 | BAD SERV. TEST RIP SOURCE IN. NEW AUTOSANIT? FITTED AS EXISTING ONE SENT FOR WARRANTY                                                                                                                                                                            | LM      |
| 5.5.23    | SAMPLES RUN - TOO MUCH SEPARATION, GC CAL CONTROLLER RESET + REPROGRAMMED - PEAK SEPARATION IMPROVED + PEAK HEIGHT IMPROVED                                                                                                                                      | SB / JH |
| 5.5.23    | GC set 65% → GC set 60%                                                                                                                                                                                                                                          |         |
| 9/5/23    | Source fitted with new filament filament + failed shortly after conditioning. Old filament from the test rig fitted. CO2 only run started. 0.03 SD                                                                                                               | SB      |
| 10/5/23   | Unhook up for CO2 and initiated 180mg precision run. 0.07 Source won't hold N2 settings, trying to nurse it into submission - PC System tried an auto-update and caused a Timeout fault to appear. Wayne installed a new version of SW that has cured the fault. | SB      |







## 5 - FAULT REPORTING

|                   |                        |       |            |
|-------------------|------------------------|-------|------------|
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| Fault(s)            | Action Taken                                                                            | By Whom | Total Time Taken to Resolve |
|---------------------|-----------------------------------------------------------------------------------------|---------|-----------------------------|
| Refused<br>Replaced | Filament failures<br>H.T cable failures<br>System controller failure<br>Source rebuilt. | S.B.    |                             |
|                     | Cat controller programmed wrong - reprogrammed.                                         |         |                             |
|                     | Flight tube dirty - baked out                                                           |         |                             |
| N.B                 | All these faults interacted with each other causing DAYS of lost test time              |         |                             |

## 6 - TEST / ACCEPTANCE SPECIFICATION

|                   |                        |       |            |
|-------------------|------------------------|-------|------------|
| Customer:         | Minerva Scientific Ltd |       |            |
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| HS20-22                       |                    |      |  |
|-------------------------------|--------------------|------|--|
| Reference Gas Precision (n=5) |                    |      |  |
| <sup>13</sup> C               | (CO <sub>2</sub> ) | 0.06 |  |
| <sup>15</sup> N               |                    | 0.06 |  |
| <sup>18</sup> O               | (CO <sub>2</sub> ) | 0.06 |  |
| <sup>34</sup> S               | (SO <sub>2</sub> ) | 0.1  |  |
| <sup>2</sup> H                |                    | 0.4  |  |

| Reference Gas Linearity |           |  |
|-------------------------|-----------|--|
| <sup>13</sup> C         | ≤0.02‰/nA |  |
| <sup>15</sup> N         | ≤0.02‰/nA |  |

| IsoEarth & IsoEarth+ |          |      |  |          |      |
|----------------------|----------|------|--|----------|------|
| Combustion (n=5)     |          |      |  |          |      |
| <sup>13</sup> C      | 100 µg C | 0.1  |  | 10 µg C  | 0.8  |
| <sup>15</sup> N      | 100 µg N | 0.15 |  | 10 µg N  | 1.5  |
| <sup>34</sup> S      | 25 µg S  | 0.3  |  | 10 µg S  | 1.0  |
| Dual                 | 400 µg C | 0.1  |  | 100 µg N | 0.15 |

| Integra2        |                     |            |             |   |
|-----------------|---------------------|------------|-------------|---|
| <sup>13</sup> C | 100 µg C            | 0.2        | Actual 0.07 | ✓ |
| <sup>15</sup> N | 100 µg N            | 0.3        | 0.09        | ✓ |
| Dual            | 100 µg N & 400 µg C | 0.4 & 0.15 | 0.09 & 0.12 | ✓ |
| <sup>34</sup> S | 30 µg S             | 0.5        |             |   |
| <sup>18</sup> O | 100 µg O            | 0.5        | 0.12        | ✓ |

LN 100 µg N  
 LN 250 µg C  
 S030\_v9

0.5  
 0.5

0.17  
 0.41  
 07/10/2019

## 6 - TEST / ACCEPTANCE SPECIFICATION

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| HT-EA           |                        |     |  |
|-----------------|------------------------|-----|--|
| Pyrolysis (n=5) |                        |     |  |
| <sup>18</sup> O | 100 µg O or 1 µl water | 0.3 |  |
| <sup>2</sup> H  | 200 µg H or 1 µl water | 1.0 |  |

| Aqua, µCarbs & GasBox |                          |      |  |                          |     |
|-----------------------|--------------------------|------|--|--------------------------|-----|
| Equilibrations (n=5)  |                          |      |  |                          |     |
| <sup>18</sup> O       | 0.2 ml water             | 0.1  |  |                          |     |
| <sup>2</sup> H        | 0.2 ml water             | 2.0  |  |                          |     |
| Carbonates (n=5)      |                          |      |  |                          |     |
| <sup>13</sup> C       | 100 µg CaCO <sub>3</sub> | 0.08 |  |                          |     |
| <sup>18</sup> O       | 100 µg CaCO <sub>3</sub> | 0.1  |  |                          |     |
| Gas Analysis (n=5)    |                          |      |  |                          |     |
| <sup>13</sup> C       | 5% CO <sub>2</sub>       | 0.1  |  | Air CO <sub>2</sub>      | 0.1 |
| <sup>18</sup> O       | 5% CO <sub>2</sub>       | 0.1  |  | Air CO <sub>2</sub>      | 0.2 |
| <sup>2</sup> H        | 0.5 ml H <sub>2</sub>    | 1.5  |  |                          |     |
| <sup>15</sup> N       | 0.5 ml N <sub>2</sub>    | 0.1  |  | 100 ppm N <sub>2</sub> O | 0.5 |
| <sup>13</sup> C       | Breath (12 ml)           | 0.1  |  |                          |     |
| DIC (n=5)             |                          |      |  |                          |     |
| <sup>13</sup> C       | 15ppm (0.5ml)            | 0.15 |  |                          |     |

| LC-I            |  |     |  |
|-----------------|--|-----|--|
| (n=5)           |  |     |  |
| <sup>13</sup> C |  | 0.2 |  |

## 6 - TEST / ACCEPTANCE SPECIFICATION

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| GC Orchid                         |              |          |     |  |         |      |
|-----------------------------------|--------------|----------|-----|--|---------|------|
| Combustion (n=3 for each analyte) |              |          |     |  |         |      |
| <sup>13</sup> C                   | 3 Alkanes    | 100 ng C | 0.2 |  | 10 ng C | 0.5  |
| <sup>15</sup> N                   | 2 Amines     | 100 ng N | 0.5 |  | 14 ng N | 1.5  |
| Pyrolysis (n=3 for each analyte)  |              |          |     |  |         |      |
| <sup>2</sup> H                    | 3 Alkanes    | 250 ng H | 3.0 |  | 25 ng H | 10.0 |
| <sup>18</sup> O                   | 3 FAMES      | 100 ng O | 0.5 |  | 20 ng O | 2.0  |
| Water pyrolysis (n=5)             |              |          |     |  |         |      |
| <sup>2</sup> H                    | 0.1 µl water | 3.0      |     |  |         |      |
| <sup>18</sup> O                   | 0.1 µl water | 0.4      |     |  |         |      |

| CryoRange       |                            |      |  |                              |     |  |
|-----------------|----------------------------|------|--|------------------------------|-----|--|
| (n=5)           |                            |      |  |                              |     |  |
| <sup>13</sup> C | Air CO <sub>2</sub> (12ml) | 0.1  |  | Air CH <sub>4</sub> (125ml)  | 0.2 |  |
| <sup>15</sup> N | Air N <sub>2</sub> (1ml)   | 0.1  |  | Air N <sub>2</sub> O (125ml) | 0.4 |  |
| <sup>18</sup> O | Air CO <sub>2</sub> (12ml) | 0.15 |  | Air N <sub>2</sub> O (125ml) | 0.7 |  |
| <sup>18</sup> O | Air O <sub>2</sub> (1ml)   | 0.1  |  |                              |     |  |
| <sup>2</sup> H  | Air CH <sub>4</sub>        | 3.0  |  |                              |     |  |
| <sup>13</sup> C | TOC (5ppm)                 | 0.4  |  |                              |     |  |
| <sup>13</sup> C | Laser                      |      |  |                              |     |  |

## 6 - TEST / ACCEPTANCE SPECIFICATION

|                   |                        |       |            |
|-------------------|------------------------|-------|------------|
| Customer:         | Minerva Scientific Ltd |       |            |
| Quotation Number: | 16922                  | Date: | 25/01/2023 |
| Job Number:       | IN1305                 | Date: | 20/02/2023 |

| Geo2                                         |                         |       |  |
|----------------------------------------------|-------------------------|-------|--|
| Internal precision (no change overs)         |                         |       |  |
| <sup>2</sup> H                               | 200 Bar µl              | 0.15  |  |
| <sup>13</sup> C                              | 100 Bar µl              | 0.01  |  |
| <sup>15</sup> N                              | 100 Bar µl              | 0.01  |  |
| <sup>18</sup> O                              | 100 Bar µl              | 0.015 |  |
| <sup>34</sup> S                              | 100 Bar µl              | 0.015 |  |
| Single cold finger volumes (10 change overs) |                         |       |  |
| <sup>13</sup> C                              | 20 Bar µl               | 0.01  |  |
| <sup>18</sup> O                              | 20 Bar µl               | 0.015 |  |
| <sup>13</sup> C                              | 3 Bar µl                | 0.02  |  |
| <sup>18</sup> O                              | 3 Bar µl                | 0.03  |  |
| CAPS (n=5)                                   |                         |       |  |
| <sup>13</sup> C                              | 50 µg CaCO <sub>3</sub> | 0.03  |  |
| <sup>18</sup> O                              | 50 µg CaCO <sub>3</sub> | 0.06  |  |
| WES (n=5)                                    |                         |       |  |
| <sup>2</sup> H                               |                         | 1.0   |  |
| <sup>18</sup> O                              |                         | 0.05  |  |
| Manifold (10 tubes)                          |                         |       |  |
| <sup>2</sup> H                               |                         | 0.5   |  |
| <sup>13</sup> C                              |                         | 0.02  |  |
| <sup>15</sup> N                              |                         | 0.02  |  |
| <sup>18</sup> O                              |                         | 0.03  |  |
| <sup>34</sup> S                              |                         | 0.03  |  |

## 6 - TEST / ACCEPTANCE SPECIFICATION

|                   |                        |       |            |
|-------------------|------------------------|-------|------------|
| Customer:         | Minerva Scientific Ltd |       |            |
| Quotation Number: | 16922                  | Date: | 25/01/2023 |
| Job Number:       | IN1305                 | Date: | 20/02/2023 |

| Special tests |
|---------------|
|               |
|               |
|               |
|               |
|               |
|               |
|               |
|               |
|               |

|                                   |                      |
|-----------------------------------|----------------------|
| Sales Signature: <i>Jo'canner</i> | Date: <i>17/5/23</i> |
| Test Signature: <i>S. Massey</i>  | Date: <i>17/5/23</i> |

## 7: ASSEMBLY AND TEST RECORD

|                   |                        |       |            |
|-------------------|------------------------|-------|------------|
| Client:           | Minerva Scientific Ltd |       |            |
| Quotation Number: | 16922                  | Date: | 25/01/2023 |
| Job Number:       | IN1305                 | Date: | 20/02/2023 |

PRODUCT:

INTEGRA

SERIAL NUMBER:

20802/4-2023/1305

 ASSEMBLED:  
 (Name)

[Signature]

Date:

26/4/23

 PRE-TEST  
 INSPECTION:  
 (Production name)

P. Hayes

Date:

26/4/23

 PRE-TEST  
 INSPECTION:  
 (Test name)

JAMES HANSON

Date:

26/4/23

 SYSTEM TEST:  
 (Name)

Steve Bennett

Date:

16/5/23

 PRE-DESPATCH  
 INSPECTION:  
 (Name)

[Signature]

Date:

17/5/23

### P.A.T. Test results

 In compliance with Low Voltage directive 73/23/EEC  
 To Low Voltage standard EN61010 - 1:1993

Earth Continuity

0.082
 $\Omega$ 

Insulation

>300
 $M\Omega$ 

Earth Leakage Current

1.25

mA. @

0.05

kVA.

Tested by:

P. Hayes

Date:

27/4/23

## 8 - Serial Numbers Record Document

|                   |                        |       |            |
|-------------------|------------------------|-------|------------|
| Client:           | Minerva Scientific Ltd |       |            |
| Quotation Number: | 16922                  | Date: | 25/01/2023 |
| Job Number:       | IN1305                 | Date: | 20/02/2023 |

| Units               | S/N               |
|---------------------|-------------------|
| MS/ABCA             |                   |
| Integra 2           | 20802/4-2023/1305 |
| Prep Unit 1         |                   |
| Prep Unit 2/Misc    |                   |
| Electronics Upgrade |                   |
| CETAC               |                   |
| Gas Box             |                   |
| Autosampler         | 42672             |
| BCR                 |                   |
| Dual Heater Block   |                   |

| Pump Kit and Optics | S/N          |
|---------------------|--------------|
| Turbo pump S        | 1T23086129   |
| Turbo pump A        |              |
| Rotary Pump         | JP2246V013   |
| Voltage             | 110 / (240)  |
| Gauge S             | L12306F033   |
| Gauge A             |              |
| Source              | 20101-214    |
| Collector 1         | 20301-131    |
| Collector 2         |              |
| Magnet              | 21-12-22 (5) |

| Parts   | S/N |
|---------|-----|
| Fan PSU |     |
| 24V PSU |     |

| PCBs             | S/N      |
|------------------|----------|
| Electronics Box  | 20230013 |
| Prep PCB         |          |
| VFC PCB          |          |
| Watchdog PCB     |          |
| Head Amp PCB 1   | 23004    |
| Head Amp PCB 2   |          |
| Electromagnet RP |          |

| Furnaces   | S/N |
|------------|-----|
| Combustion |     |
| Reduction  |     |
| HT-EA      |     |
| GC Oven    |     |
| Furnace 1  |     |
| Furnace 2  |     |

| PC      | S/N     |
|---------|---------|
| PC      | 7GPOXT3 |
| Monitor | CGUXFM3 |
| Printer |         |

### Key

|                  |                        |
|------------------|------------------------|
| Pumps:           | E: Edwards             |
|                  | P: Pfeiffer            |
| Furnaces:        | V/S: Vecstar           |
|                  | E: Elite               |
| Magnet:          | E: Electromagnet       |
|                  | S: Standard            |
| Turbos & Gauges: | S: Source              |
|                  | A: Analyser            |
| Collectors:      | Std: Standard          |
|                  | S: Sulphur             |
|                  | HD: Hydrogen Deuterium |

**Additional System Info:**



## Packing List

**Customer Reference:** 03363

**Shipper / Exporter:**

Sercon Limited  
Unit 3B Crewe Trade park  
Gateway  
Crewe  
CW1 6JT  
UK

Tel: +44 (0)1270 580008  
Reference: IN1305

**Consignee:**

Minerva Scientific Ltd  
Minerva House  
Unit 2 Stoney Gate Road  
Spondon  
Derby  
DE21 7RY

Contact Name: Nancy Ashworth-Clements  
Contact Tel Number: 01332 890384

### BOX: 1

| Quantity                              | Product Code | Product Description | Serial Number: if available |
|---------------------------------------|--------------|---------------------|-----------------------------|
| <input checked="" type="checkbox"/> 1 | 20802/4      | Integra 2           | 20802/4-2023/1305           |

Packed by:

Date:

  
17/05/23

Claims for damage or shortages must be made within 3 days



S035b\_v6

Sercon Limited  
Unit 3B Crewe Trade Park  
Gateway, Crewe  
CW1 6JT U.K.  
Company Registration No.: 4290072

Phone: +44 (0) 1270 580008  
Fax: +44 (0) 1270 252310  
sales@sercongroup.com  
[www.sercongroup.com](http://www.sercongroup.com)  
VAT No.: 771 1100 74  
19/01/2017



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Tel: +44 (0)1270 580008  
Reference: IN1305

**Consignee:**

Minerva Scientific Ltd  
Minerva House  
Unit 2 Stoney Gate Road  
Spondon  
Derby  
DE21 7RY

Contact Name: Nancy Ashworth-Clements  
Contact Tel Number: 01332 890384

### BOX: 2

| Quantity                              | Product Code | Product Description                  | Serial Number: if available |
|---------------------------------------|--------------|--------------------------------------|-----------------------------|
| <input checked="" type="checkbox"/> 1 | SI0155       | PC                                   | 7GPQXT3                     |
| <input checked="" type="checkbox"/> 1 | SI2391       | Monitor                              | CGUXFM3                     |
| <input checked="" type="checkbox"/> 1 | 70201-2      | Analyser spares kit                  |                             |
| <input checked="" type="checkbox"/> 1 | 70501-3      | Sample preparation kit               |                             |
| <input checked="" type="checkbox"/> 1 |              | Software backup USB (inside PC box)  |                             |
| <input checked="" type="checkbox"/> 1 |              | Windows recovery USB (inside PC box) |                             |
| <input checked="" type="checkbox"/> 1 |              | Manuals on software backup USB       |                             |

Packed by: 

Date: 17/05/2023

**Claims for damage or shortages must be made within 3 days**



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**Consignee:**

Minerva Scientific Ltd  
Minerva House  
Unit 2 Stoney Gate Road  
Spondon  
Derby  
DE21 7RY

Contact Name: Nancy Ashworth-Clements  
Contact Tel Number: 01332 890384

### BOX: 3

| Quantity                              | Product Code | Product Description     | Serial Number: if available |
|---------------------------------------|--------------|-------------------------|-----------------------------|
| <input checked="" type="checkbox"/> 1 | SI0101       | Magnet + feet           | 21-12-22 Num5               |
| <input checked="" type="checkbox"/> 1 | 10202-S      | 50 position autosampler | 42672                       |
| <input checked="" type="checkbox"/> 1 | 70401-1      | Integra 2 startup kit   |                             |
| <input checked="" type="checkbox"/> 1 | SI0103       | Agilent rotary pump     | JP2246V013                  |
| <input checked="" type="checkbox"/> 1 |              | Mains cable for Integra |                             |

Packed by: 

Date: 17/05/2023

**Claims for damage or shortages must be made within 3 days**



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VAT No.: 771 1100 74  
19/01/2017

## 11 – Installation Report

|                   |                             |       |            |
|-------------------|-----------------------------|-------|------------|
| Client:           | Minerva Scientific Derby UK |       |            |
| Quotation Number: |                             | Date: |            |
| Job Number:       | IN 1305                     | Date: | 08.06.2023 |

|                |                             |              |   |
|----------------|-----------------------------|--------------|---|
| Contact:       | Nany Ashworth Clements      |              |   |
| Date of Visit: | 05-08.06.2023               | No. of Days: | 3 |
| Engineer:      | Robert Kameny, James Hanson |              |   |

### Details of visit:

6.6.2023

- New unit to 2<sup>nd</sup> floor of the labs
- Old 2020 and EA taken away to Sercon as a decommissioned unit
- Gases on, used made gas lines used for the previous units (He, O<sub>2</sub>, compressed air)
- Comms established, Pumps on
- Source powered on at 3e-07mBar (achieved in about 2.5hrs)
- New reaction tubes (NC set up), Temps set up at 1000-600-60
- Left unit pumping overnight

7.6.2023

- Initial dual tuning attempts
- N<sub>2</sub>, CO<sub>2</sub> peak shape and stability : pass
- Signal obtained from 400/100 beet mix & 5ul: 3e-09 (28), 3.56e-09 (44)
- Blank as empty chamber observed at 4e-10 (15n)
- Flows and pressures: He and O<sub>2</sub> at 23 psi, Carrier flow observed at 55ml/min
- Dual precision 400/100 beet mix achieved: 0.12‰ (15n), 0.09‰ (13c), Blanks observed at 3.60e-10 (15n)
- Dual linearity 250/100 beet mix: poor std initially due to inconsistent sample prep, retuned the ion source, flash over later pm
- Att. Unit is subject to dedicated I3c analysis only
- RK to adjust unit accordingly
- Ion source tuning: HT2562, HP7, Focus85, Trap150, EV-85, IR 10.00

8.6.2023

- GC temp at 70 celsius
- 400/100 beet mix precision and linearity
- Single test signal observed (5ul 400/100)= 5.49e-09
- 400/100 and 250/100 co<sub>2</sub> only as seen am: 0.06‰ & 0.66‰
- Decided to re-tune
- HT2567, HP10, Focus88, Trap200, EV-85, IR -6.0
- New batch 400/100&250/100 beet mix achieved: 0.05‰ (-25.80 mean) & 0.18‰ (-26.10 mean)

### Recommendations:

N/A

## 11 – Installation Report

|                   |                             |       |            |
|-------------------|-----------------------------|-------|------------|
| Client:           | Minerva Scientific Derby UK |       |            |
| Quotation Number: |                             | Date: |            |
| Job Number:       | IN 1305                     | Date: | 08.06.2023 |

**Faults and Shortages:**

N/A

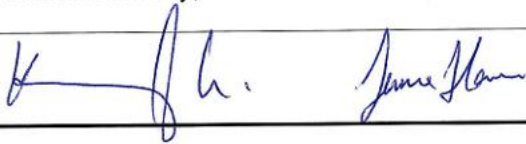
**Follow up:**

N/A

Engineer: Robert Kameny, James Hanson

Date: 08.06.2023

Signed:



## 12 – Installation Acceptance and Warranty Certificate

|                   |                              |       |            |
|-------------------|------------------------------|-------|------------|
| Client:           | Minerva Scientific Derby, UK |       |            |
| Quotation Number: |                              | Date: |            |
| Job Number:       | IN1305                       | Date: | 08.06.2023 |

|                    |                             |
|--------------------|-----------------------------|
| Contact:           | Nancy Asworth Clements      |
| System:            | Integra 2                   |
| Software:          | Calisto CF-IRMSv 40.7.1     |
| Engineer:          | Robert Kameny, James Hanson |
| Installation Date: | 06-08.06.2023               |

|                     |          |
|---------------------|----------|
| Warranty commences: | 8.6.2023 |
| Warranty Expires:   | 7.6.2025 |

### Customer Acceptance:

 Name: NANCY ASHWORTH - CLEMENTS

 Signature: [Signature]

 Date: 08/06/23

### Engineer's Signature:

On behalf of Sercon Limited

 Name: Robert Kameny

 Signature: [Signature]

 Date: 8.6.2023

Notes: